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> 'Composed of man-made symbols like words, it is not nor ever can be endless; to speak of the sum of a non-existing endless series is meaningless; moreover, even if we supposed the series to be endless, to be summable and to have 1 for its sum, this 1 would be neither finite nor infinite, for it would not be a magnitude, inasmuch as the summands are themselves not magnitudes but are merely empty abstract symbols; if 1 be said to be a magnitude, in the sense of representing a magnitude, then, if the magnitude 1 be composed of two equal magnitudes, ½ will be a magnitude in the same sense, and so on for the other symbols; if all the symbols be magnitudes in the indicated sense, the summation of the abstract series will be the summation of an endless series of magnitudes; otherwise not; and now what I have contended in my book is that, if the magnitude 1 be finite, not more than a relatively few of the symbols of the series can be magnitudes, and this contention, denying the infinite divisibility of finite magnitude, is based on grounds other than that advanced in the above-quoted passage from my argument'.

This is not the place to recount, much less to estimate, those 'other' grounds. It must, however, be said, in passing, that one of them is in point of kind almost perfectly indicated by the following words of Clerk Maxwell[4]:

> What we assert is that after we have divided a body into a certain finite number of constituent parts called molecules, then any further division of these molecules will deprive them of the properties which give rise to the phenomena observed in the substance.

The classic form of the false thesis tacitly invoked by Lucretius in the above-quoted passage to fortify his 'other' grounds for denying the infinite divisibility of a finite magnitude is exceedingly vague: all infinites are equal. It has had an age-long and world-wide vogue. Thus Kanadi, an old Hindoo author, employs the thesis to prove that, if every body be infinitely divisible, there can be "no difference of magnitude between a mustard seed and a mountain[5]". In this connection mathematicians, especially those who may be interested in the history of the notion of infinity, will be glad to have their attention called to a little-known letter[6] of Newton dealing with the matter. The letter, which is addressed to Richard Bentley, is very interesting on several accounts: it points out the vagueness and the falsity of the above-mentioned thesis, which Dr. Bentley had assumed to be true; it repeatedly employs the term infinite in a sense not less vague and indeterminate; it virtually asserts that, if two infinite magnitudes be equal, the addition of any finite magnitude to either of them will destroy the equality.

In closing this note I desire to guard against the danger of leaving a false impression. The mere correctness of the Lucretian concept of infinity by no means accounts for the immense rôle of the concept in the author's work. The secret lies in the fact that the concept so powerfully stimulated the imagination of a great thinker and poet as to cause him to express and to preserve in immortal form a body of ideas which he had acquired from the then still extant works of Epicurus and which after the long lapse of centuries are found to be among the most fruitful scientific ideas of our time.

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THREE-HUNDREDTH ANNIVERSARY OF THE PERSE SCHOOL

According to the London Morning Post, The Perse School, at Cambridge, celebrated its three-hundredth anniversary on November 15 last. The occasion was deemed important enough to call for the presence of Mr. H. A. L. Fisher, Minister of Education, who delivered an address in honor of the occasion and of Stephen Perse, founder of the School. Someone who signs himself "E. B. O." sent to the Post a very enthusiastic eulogy of the School, from which I copy a few sentences.

> <The Perse School> is a laboratory, in fact, of the applied science of education—a place, moreover, where experiments set afoot by teachers of genius, mightily in love with their calling, have long since been justified by experience. . . .
>
> This is due to the operation of new methods and a new relationship between master and pupil which are not so easily defined, though very definitely felt, by any intelligent visitor. The mystery—a miracle to middle-aged persons brought up under the soulless old gerund-grinding routine—is best elucidated by considering the way in which Latin and Greek are taught by the Headmaster, Dr. W. H. D. Rouse, who has been the new founder of the Perse School, and has found men to co-operate in his purpose. Latin and Greek are taught as living languages; which, indeed, they are, for they were never for a moment dead except in that crypt of the dull pedantic mind. The boys learn to talk Latin and Greek at their ease, to joke and chaff in them, to think in them. Let those who have kept enough of their laborious schooling consider the following passage from a paper by Dr. Rouse in a group of essays published by experts on the new teaching.
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> "If they (the boys) can play like this with their knowledge, if they can jest and pun, is Latin or Greek a dead language? One, Bird, came in with a message: at once some one cried 'Bonum omen! avis a dextra!' . . . One talking of metre, happened to say, 'ἔστι πούς —', and another, not letting him finish, asked 'ποῦ 'στι'; I remarked of a certain vive voce summary, 'βραχὺ μέν—'. At once some one said, 'ὀλίγον τε καὶ φίλον τε', and another, 'βραχὺς γὰρ καὶ ὁ παῖς'. Or again, on Ovid, Ex Ponto i, 2, 20, the reader explained, 'Niobe saxea est facta', another added 'Sicut Lotti uxor', and a third '*Salse* dictum!' Trifles, no doubt, but are they so bad? would they not add a spice to table-talk? And they are signs of a mood which I venture to think is not unimportant for education. One more I will add, to show how naturally mistakes are corrected. A boy read (Hor. iv. 14, 5), 'o qua sol habitabilis illustrat oras'; amidst general laughter some one cried, 'Non est sol habitabilis'. I said: 'Si sol habitabilis est, i tu et habita', and a boy said, 'Non in sole habitat ille sed in luna; est lunaticus'. Is not this better than 'Parse *habitabilis*', or 'What does it agree with?' "

C. K.

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[4] Theory of Heat, p. 285.

[5] See Daubeny's Introduction to the Atomic Theory, p. 5.

[6] See The Works of Richard Bentley, vol. III, p. 207.